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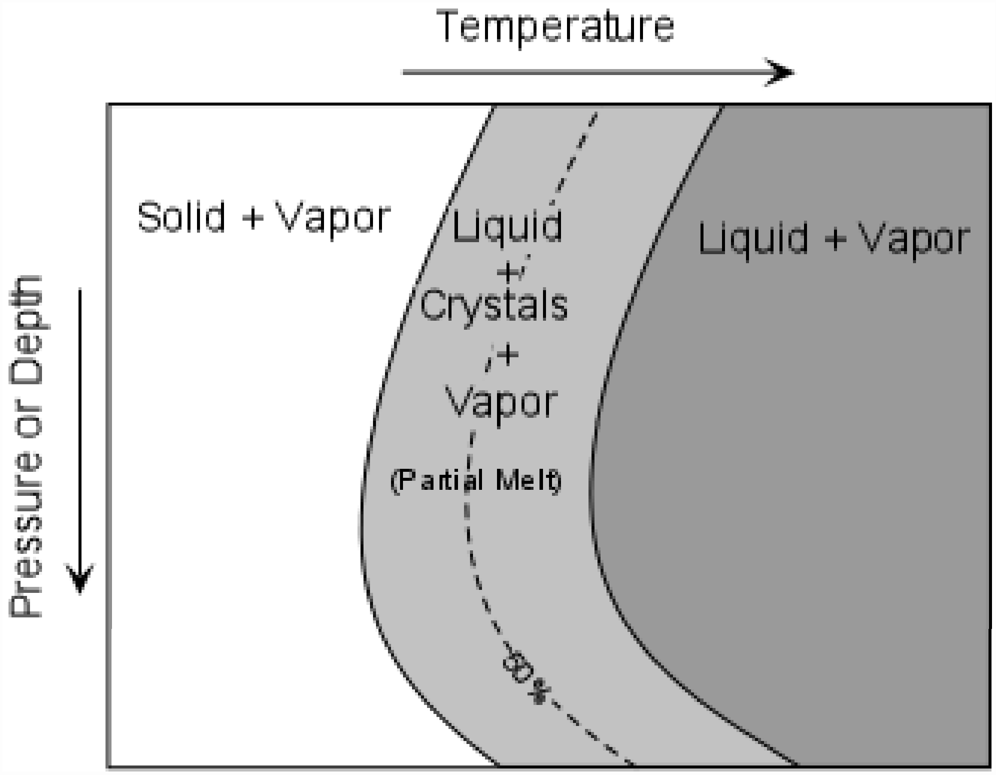
INTRODUCTION TO SEDIMENTARY ROCK

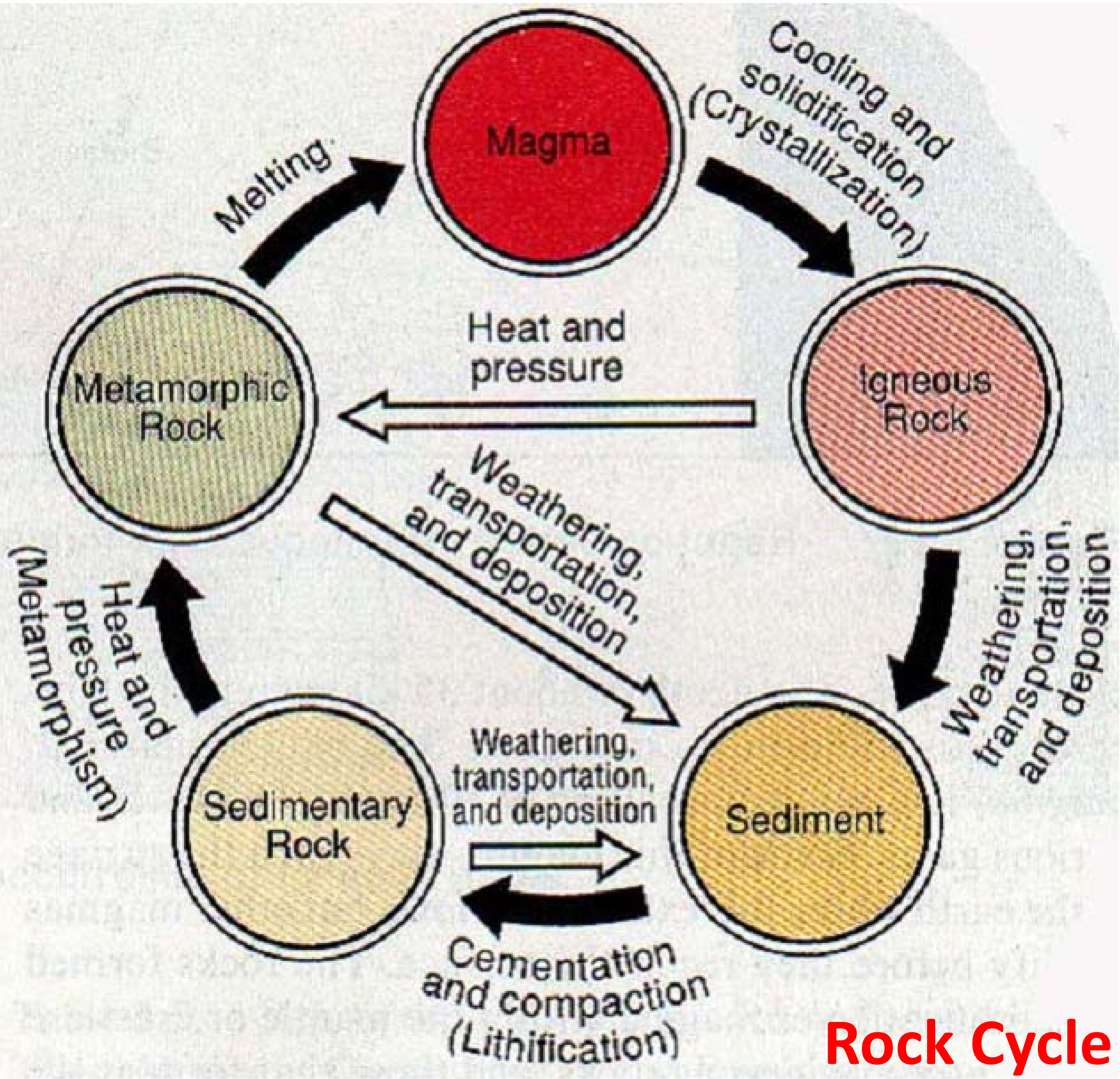
LECTURE 7#

EG203 Igneous , Metamorphic and Sedimentary Petrology

- Autolith ➔ same magma
- Cognitive Xenolith ➔ different magma (rock)



Sediments and Sedimentary Rocks


Magma
Cooling and solidification (Crystallization)
Melting
Heat and pressure
Metamorphic Rock
Igneous Rock
Weathering, transportation, and deposition
Weathering, transportation, and deposition
Heat and pressure (Metamorphism)
Sedimentary Rock
Weathering, transportation, and deposition
Sediment
Cementation and compaction (Lithification)

Rock Cycle

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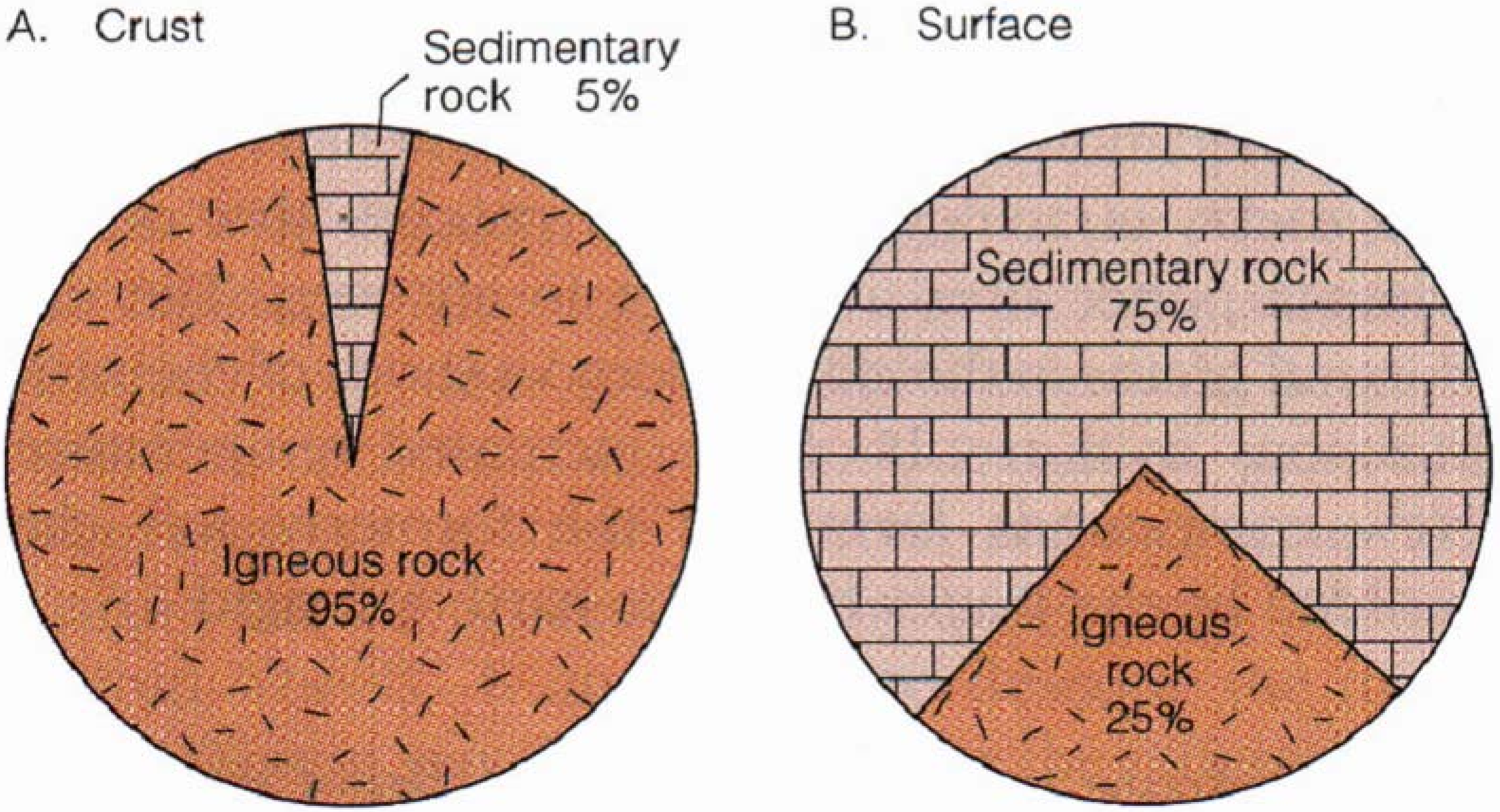
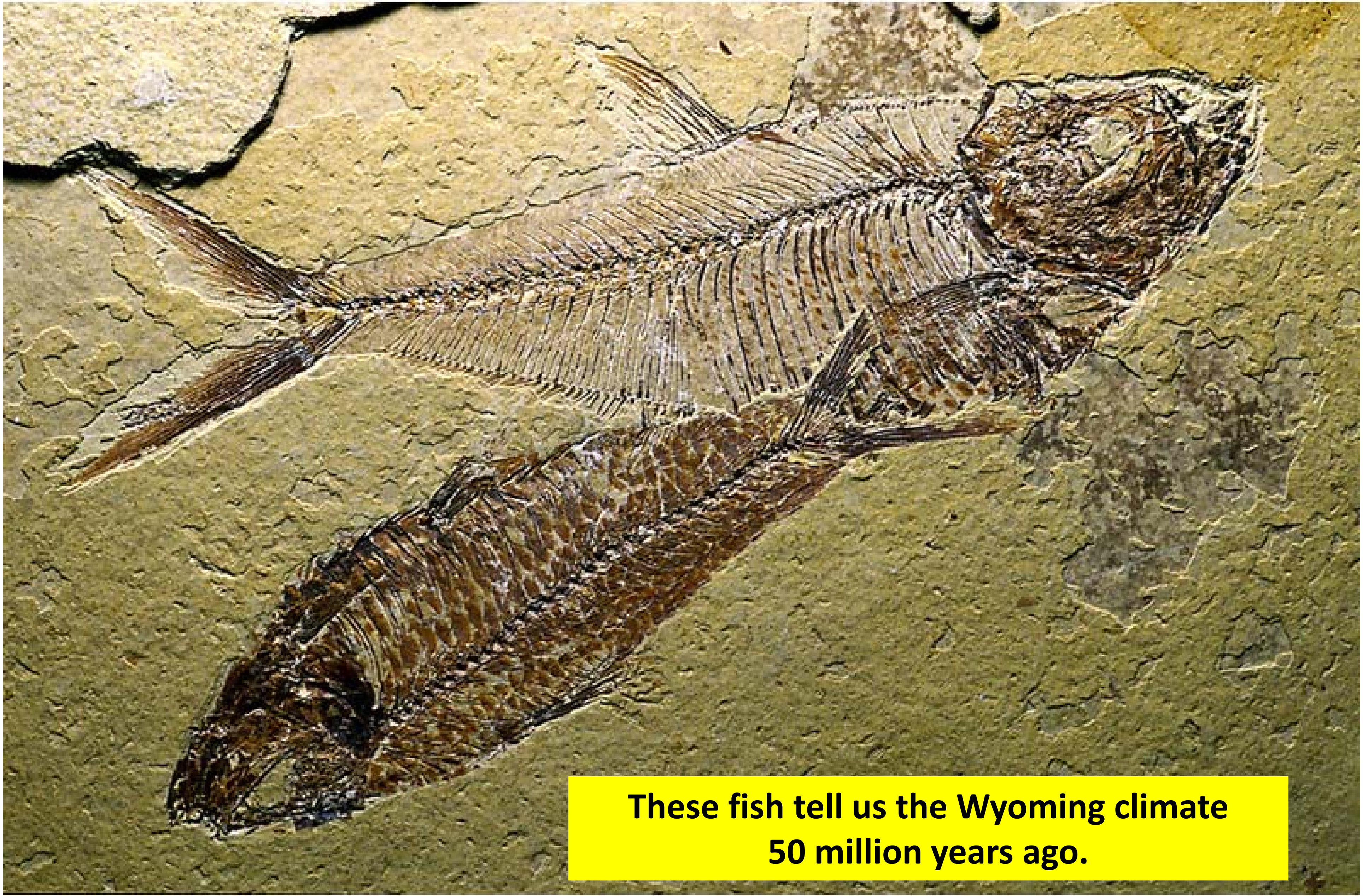
What is a sedimentary rock?

- **Sedimentary rocks result from mechanical and chemical weathering**
- **Comprise ~ 5% of Earth's upper crust**
- **About 75% of exposed rocks**
- **Contain evidence of past environments**
    - **Record how sediment is transported**
    - **Often contain fossils**


A. Crust
Sedimentary rock 5%
Igneous rock 95%
B. Surface
Sedimentary rock 75%
Igneous rock 25%

Fossil Fish - 50 Million Year Old Lakes in southern Wyoming



These fish tell us the Wyoming climate
50 million years ago.

Sedimentary Rock made of fine-grained mudstone.

Sedimentary rocks are the product of the creation, transport, deposition, and diagenesis of detritus and solutes derived from pre-existing rocks.

Steps Involved in Formation of Clastic Sedimentary Rock

Weathering

Erosion

Transport

Deposition

Lithification

--Compaction

--Cementation

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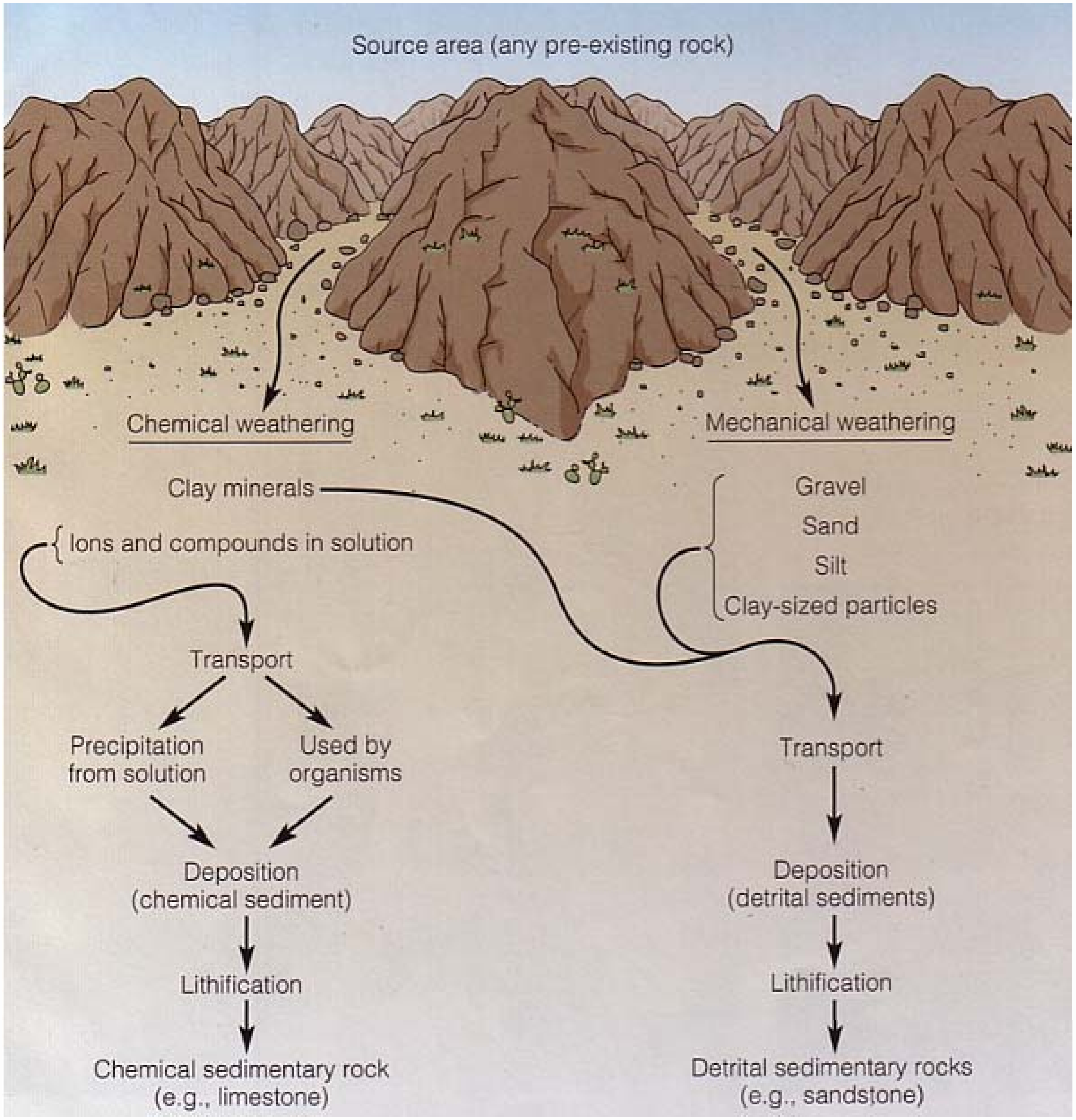
Source area (any pre-existing rock)
Chemical weathering
Mechanical weathering
Clay minerals
Ions and compounds in solution
Gravel
Sand
Silt
Clay-sized particles
Transport
Precipitation from solution
Used by organisms
Deposition (chemical sediment)
Lithification
Chemical sedimentary rock (e.g., limestone)
Transport
Deposition (detrital sediments)
Lithification
Detrital sedimentary rocks (e.g., sandstone)

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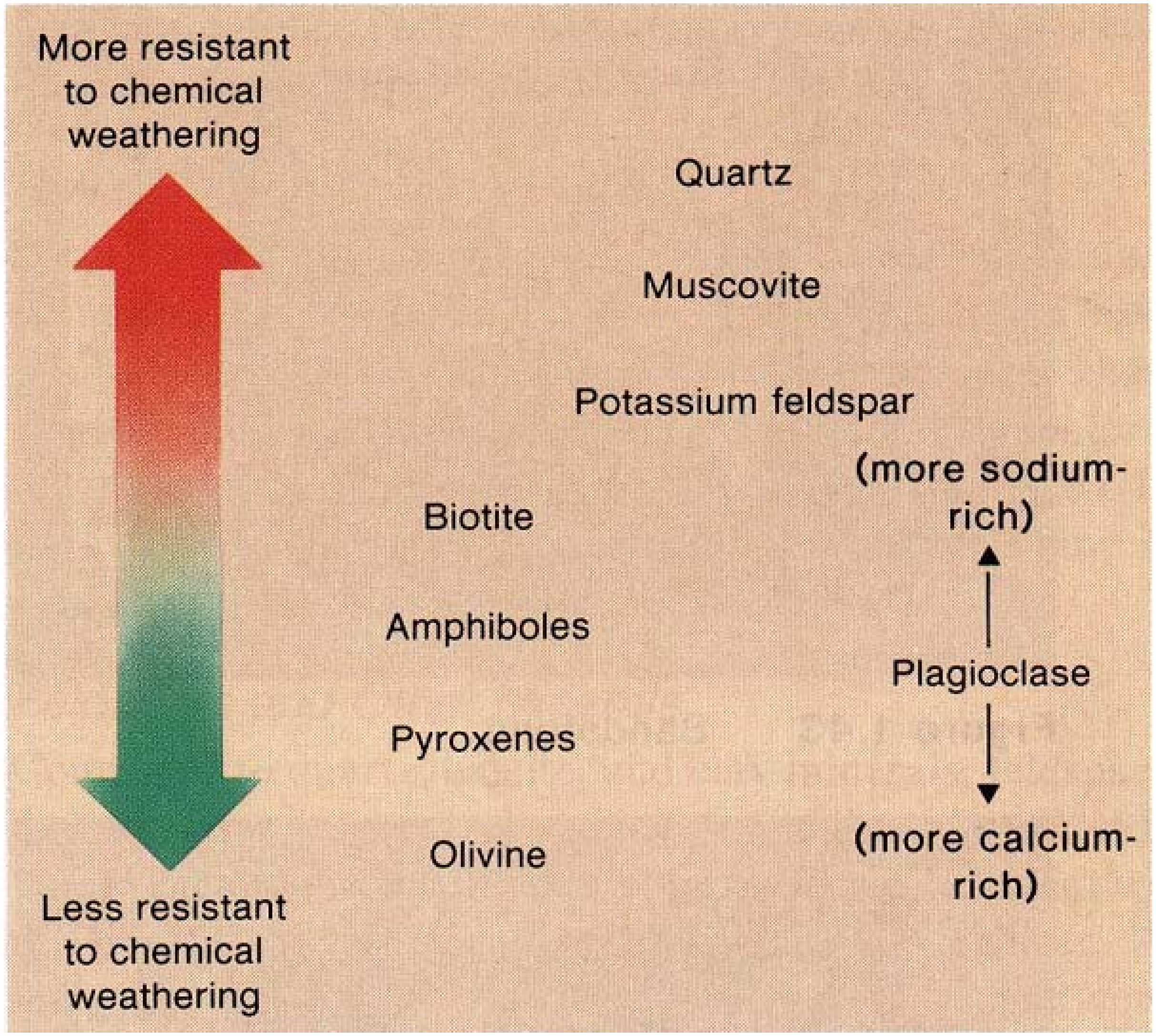
Diagram of Mineral Stability



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Weathering